Data Documentation Template

This data documentation template is designed to assist BC analysts in recording the data and methodologies utilized in their BCA. BC analysts should keep in mind that a well-documented BCA means a knowledgeable subject matter expert (another BC analyst) should be able to re-create the BCA from the supporting documentation provided (with a Mitigation application submitted for funding) without any additional explanation. BC analysts should provide an electronic or paper copy of the full BCA to compliment any template or summary submitted to FEMA for review.

A **Data Source and Documentation Summary Chart** is provided at the end of the template chart for completion.

Frequency Damage Method (Riverine Limited Data Module): Applicable to Most Hazards

The Frequency Damage Method can be used for any hazard for which frequency-damage relationships can be established from historical damage data and/or engineering judgment. Analysts should note that the Frequency Damage module, based on event frequency or a general approach, was designed for floods without quantitative flood hazard data and other hazards without standardized hazard data easily available (e.g., landslides, ice-storms, etc.) This module should generally not be used for earthquake, hurricane, tornado, or wildland/urban interface fire projects due to the fact that FEMA has BCA modules to support BCA for these hazards.

The BCA software is labeled Riverine Limited Data Module because this module was originally developed for analysis of flood projects. This module is commonly used for flood projects (for locations without quantitative flood hazard data) and for other hazards such as ice storms, windstorms, snow, landslides, etc.

Data Type	Value	Description	DOCUMENTATION	Source
Discount Rate	**The OMB-mandated discount rate of 7% must be used for all BCAs.**	The discount rate determines the time-value of money In a FEMA benefit-cost analysis, a discount rate is used to calculate a value today (the Net Present Value) of future benefits so that they can be compared to the costs of a mitigation project.	■ Electronic or paper copy of the BCA. ■ **The OMB-mandated discount rate of 7% must be used for all BCAs.**	■ **The OMB-mandated discount rate of 7% must be used for all BCAs.**
Mitigation Project Useful Lifetime	Years	Estimated amount of time that mitigation action will be effective. Includes any maintenance activities that will be done to prolong effectiveness).	■ Reference FEMA standard value if utilized. ■ If FEMA standard value is not utilized then include a justification of the value entered. ■ May also attach a letter, e-mail, etc. from credible agency documenting this estimate (if resource other than FEMA standard value).	■ FEMA guidance. ■ Government representative or private professional with expertise relevant to the proposed project.
Mitigation Project Cost (includes data inputs for net mitigation project cost and additional annual maintenance cost ($/yr) for a project)	Total dollar value	Estimated total cost of the proposed mitigation action **(not just the Federal share)** and any maintenance activities that will be done to prolong effectiveness.	■ Narrative summary in the BCA module should state that this value comes from a potential or submitted project application. ■ Must document source and reasoning in estimate of maintenance activity cost.	■ Should support the value submitted with the project application. ■ Government representative or private professional with expertise relevant to the proposed project. ■ For maintenance values, see Government representative or private professional with expertise relevant to the proposed project.

Data Type	Value	Description	DOCUMENTATION	Source
Base Year of Costs	Year	The year in which the mitigation project's cost was estimated. If cost estimates are several years old, they may need to be adjusted by the user to account for inflation in costs between the base year and the present.	■ None required if cost figures are current year or not manipulated. ■ If cost figures are adjusted provide a description of methodology utilized.	■ Applicant. ■ FEMA's inflation calculator located on the Mitigation BCA Toolkit.
Type of Facility [for Loss of Function calculation]	Years	Selection describes the facility type being considered in the loss of function analysis. There are three choices: utilities, roads and bridges, and buildings. Selecting facility type brings you directly to your concern for using the software.	■ None required for selection of *type* of facility via buttons.	■ Applicant.
Before Mitigation Damages and Losses (in FEMA software, the first large table)	Dollars	Damages to buildings, contents, and infrastructure before a mitigation project is assumed to be in place. May include loss of function impacts, unless calculated separately in loss of function section (FEMA software). Casualty values as appropriate (if proposed project reduces them).	■ Detailed breakdown of specific damages in separate categories (i.e. structural, contents, displacement, etc.). ■ If damages are derived or calculated rather than taken verbatim from a credible source, describe calculation method and provide copies of all source data.	■ Historical data from past events, i.e. insurance or repair records, photographs of damaged facilities. ■ Expert in data derivation for given hazards. ■ Newspaper or other written accounts (if credible).
Loss of Function	Varies, depending on facility lost and data type	In FEMA software, depending on the selection of facility type (via the button) users provide data about the volume and value of the service that is provided. The volume and value entries are linked to the time of lost function to determine future damages. In many situations, the economic impacts of loss of function (e.g., road closure or loss of a public service) are often much larger than physical damages alone, so the benefits of a project may be largely based on avoiding losses of function rather than physical damages. Note: There is a difference between the calculation method of the LD module and in the newer "What is a Benefit?" guidance. Either calculation method is OK, but the "What is a Benefit?" values reflect FEMA's most recent values. For questions, please call the BC Hotline.	■ Varies depending on data type. ■ For utility and road/bridge volume**,** provide written backup for data such as kilowatts, gallons or trips per day. Backup may include letters from utilities or traffic departments, internet site printouts, etc. ■ For utility and road bridge value**,** provide written backup for normal value of the service; e.g., cost per gallons of water or kilowatt of electricity under normal conditions; or value of traffic/traffic delay (see Source column at right) ■ For building annual budget value provide written backup from a knowledgeable source. If estimated provide written details on how estimated, including assumed or calculated staff salaries and overhead.	■ Varies depending on the facility type (utilities, roads/bridges, buildings). ■ Source is generally a party responsible for operating and/or maintaining a facility. ■ Local electric, gas or water company. ■ Department of transportation or public works. ■ Building manager, official of organization housed in a building. ■ "What is a Benefit?" guidance ■ FEMA training materials. ■ Web sites.

Data Type	Value	Description	DOCUMENTATION	Source
Frequency of historical events	Years	Return frequency of past or projected damaging events (i.e. a 5-year event, 10-year event etc.) Documentation and source credibility become more critical when analysis uses high-frequency events (i.e. 1- 5 year return interval). Accurately determining frequencies is a key determinant in this kind of analysis. Methods include analysis of historical damage data (frequency of events) or engineering calculations that determine other frequencies by interpolation, extrapolation or other methods.	■ Varies depending on how the data were obtained. If obtained directly from a public source, provide copies of source documents, letters, or web pages. ■ If derived or calculated, provide written explanation of methodology used, plus written documentation of any source data (i.e. dates of past events that caused damage). ■ For flood hazards, if using FEMA frequency calculator software, provide printout of calculator results and source flood hazard data (usually Flood Insurance Study or technical report) utilized.	■ Source varies depending on available resources in the event area. ■ US Geological Survey (stream gauge data), National Weather Service or National Ocean and Atmospheric Administration (sometimes these agencies calculate frequencies for large events), among many others. ■ Insurance records (if used to assess how often events occurred), newspaper accounts when they cite other credible sources. ■ Engineering or technical reports. ■ FEMA frequency calculator. ■ Expert individuals, i.e. engineers or State Climatologist who have independently calculated frequencies. ■ See Data Derivation sections and Case Studies on the Mitigation BCA Toolkit.
Time of Lost Function (pre-project)	Number of days or partial days (in before -mitigation damages and losses table).	The number of days that a function was or is calculated to be lost in events of various frequencies (i.e. a bridge was unusable for five days after a flood) **before** the mitigation project is completed. The loss of function calculation will not work if this figure is not provided.	■ If based on historical occurrence (preferred), written documentation from a credible source. This may be a letter from an official, copy of a newspaper account, a copy of a written technical study. ■ If the figure is derived or estimated, written explanation of how this was accomplished, including all assumptions.	■ Varies depending on type of function that is lost. ■ An official from a public utility, public works or transportation department. ■ Technical report or study. ■ Mitigation project specifications or technical documents related to project development. ■ Engineers.

Data Type	Value	Description	DOCUMENTATION	Source
After Mitigation Damages and Losses	Dollars	Same categories as above in Before Mitigation section, except assumes that the mitigation project is in place. Damages and losses after mitigation are seldom eliminated completely, except in the case of acquisition/demolition or relocation projects. All analyses must include post-project estimates of damages, even if they are zero (for an acquisition project, for example). BCAs MUST include estimate of (reduced) damages and losses after mitigation.	■ Same guidance as above in Before Mitigation Section. ■ Documentation must include enough detail about the scope of the mitigation project to support estimates of the effectiveness of the mitigation project in reducing damages and losses after mitigation.	■ Engineering or other technical reports. ■ Design or planning specifications from a technically qualified source, i.e. an engineer.
Time of Lost Function (post-project)	Number of days or partial days (in after-mitigation damages and losses table).	The number of days that a function was or is calculated to be lost in events of various frequencies (i.e. a bridge was unusable for five days after a flood) **after** the mitigation project is completed. Except where a function (utility, road/bridge, building) is completely eliminated, there will be post-project lost function time, and it should be entered in this part of the analysis.	■ Written documentation from a credible source, generally related to the design of the mitigation project. This may be a letter from an official, copy of a newspaper account, a copy of a written technical study. ■ If the figure is derived or estimated provide a written explanation of how this was accomplished, including all assumptions.	■ Varies depending on type of function that is lost. ■ An official from a public utility, public works or transportation department. ■ Technical report or study. ■ Mitigation project specifications or technical documents related to project development. ■ Engineers.
Dollar value of a Casualty	Dollars (present year)	Estimated value of the loss of one person.	■ If typical values in FEMA software are used then provide print out of software. ■ If user-determined values are used provide full documentation of reasons for differences from FEMA typical values.	■ FEMA “What is a Benefit” guidance
Dollar value for minor/major injuries	Dollars (present year)	Average of the estimated values for the treatment of major and minor injuries per person.	■ If typical values in FEMA software are used then provide print out of software. ■ If user-determined values are used provide full documentation of reasons for differences from FEMA typical values.	■ FEMA “What is a Benefit” guidance

Frequency Damage Method (Riverine Limited Data Module): Applicable to Most Hazards

Data Documentation Template – Data Source and Documentation Summary

Applicant (State):	
Sub-Applicant:	
Project Title:	

ITEM	DATA VALUE	VALUE USED IN BCA	DATA SOURCE	Documentation Included (Yes, No or NA)
Discount Rate	***The OMB-mandated discount rate of 7% must be used for all BCAs.***			
Mitigation Project Useful Lifetime	*Years*			
Mitigation Project Cost (includes data inputs for net mitigation project cost and additional annual maintenance cost ($/yr) for a project)	*Total dollar value*			
Base Year of Costs	*Year*			
Type of Facility [for Loss of Function calculation]	*Years*			
Before Mitigation Damages and Losses (in FEMA software, the first large table)	*Dollars*			
Loss of Function	*Varies, depending on facility lost and data type*			
Frequency of historical events	*Years*			
Time of Lost Function (pre-project)	*Number of days or partial days (in before -mitigation damages and losses table).*			
After Mitigation Damages and Losses	*Dollars*			
Time of Lost Function (post-project)	*Number of days or partial days (in after-mitigation damages and losses table).*			
Dollar value of a Casualty	*Dollars (present year)*			
Dollar value for minor/major injuries	*Dollars (present year)*			